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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,787	02/06/2006	Kenichi Wakui	274940US0PCT	9324

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EXAMINER	
HAILEY, PATRICIA L	

ART UNIT	PAPER NUMBER
1793	

NOTIFICATION DATE	DELIVERY MODE
07/16/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/542,787	WAKUI, KENICHI	
	Examiner	Art Unit	
	PATRICIA L. HAILEY	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-10 and 14-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-10 and 14-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Applicants' remarks and amendments, filed on March 30, 2009, have been carefully considered. Claims 11-13 have been canceled; no new claims have been added.

Claims 7-10 and 14-18 remain pending in this application.

(In the previous Office Action, the Examiner inadvertently omitted the addition of new claim 18. The Examiner apologizes for the omission.)

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Document was filed on July 20, 2005.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

2. Claims 7-10 and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. 11/180902 in view of Friedrich (U. S. Patent No. 3,669,877) and Miller et al. (U. S. Patent No. 4,340,465).

The Japanese Patent teaches a process for the catalytic cracking of a hydrocarbon to produce lower olefins (paragraph [0003]), wherein the reaction takes place in the presence of a catalyst supporting a rare earth element in an amount of 0.4-

20, expressed in terms of atomic ratio to aluminum in a crystalline aluminosilicate zeolite (as recited in **claims 9 and 10**). See the Abstract of the Japanese Patent.

Exemplary feedstocks include hydrocarbon raw materials having from 2 to 30 carbon atoms (as recited in **claim 16**), such as paraffins (e.g., ethane, propane, butane, pentane, hexane, naphtha, and gas oil, as recited in **claim 17**); see paragraph [0005] of the Japanese Patent.

The zeolite component (examples of which include ZSM-5 and ZSM-11, **claim 18**) of the catalyst preferably exhibits a SiO_2/Al_2O_3 ratio of from 25-800, most preferably 100-300 (as recited in **claim 7**), and examples of the rare earth component include lanthanum, cerium, praseodymium, neodymium, samarium, gadolinium, dysprosium (as recited in **claim 8**), etc. See paragraph [0006] of the Japanese Patent.

In paragraph [0009] of the Japanese Patent, cracking conditions such as a fixed bed or fluid bed (synonymous with "fluidized bed", as recited in **claim 7**), a steam supply of 0.1-1 wt. % in the hydrocarbon feed (as recited in **claim 14**), and temperatures ranging from about 350°C to about 780°C are depicted.

The Japanese Patent does not specifically disclose that the fluid bed ("fluidized bed") "permits continuous regeneration of the catalyst". However, Friedrich teaches that it is known in the art of fluidized bed catalytic reactions to employ the catalysts in a continuous regeneration operation, see col. 1, lines 12-18. One of ordinary skill in the art would reasonably expect that the fluid bed disclosed in the Japanese Patent would permit continuous regeneration of the catalyst, in view of Applicants' definition of this phrase at page 7, lines 27-33 of the Specification. Further, it would have been obvious

to one of ordinary skill in the art to employ a fluidized bed permitting continuous regeneration of the catalyst, which leads to lower attrition rates for the catalyst, reduces catalyst loss, and maximizes the performance characteristics of the reaction system, as taught by Friedrich, see col. 1, lines 28-53.

Additionally, the Japanese Patent does not specifically disclose the pressure conditions, catalyst to hydrocarbon mass ratio, or the contacting time (also recited in **claim 15**) recited in **claim 7**.

Miller et al. is relied upon to show conventional process conditions for catalytically cracking a hydrocarbonaceous feedstock with a catalyst comprising rare earth-containing zeolites (col. 7, lines 23-37 and col. 8, lines 15-44).

Exemplary cracking conditions include a temperature from about 425°C to about 650°C, a pressure ranging from about 0 to about 6 atmospheres (0 to 607.95 kPa), a catalyst to hydrocarbon weight ratio (considered equivalent to "mass ratio") of from about 2 to 15, and residence or contact times from about 0.3 to 10 seconds. See col. 3, lines 21-44 of Miller et al.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of the Japanese Patent by incorporating therein the conventional catalytic cracking conditions of Miller et al., motivated by the references' common teachings regarding the catalytic cracking of hydrocarbons, in the presence of crystalline aluminosilicate zeolites containing rare earth components, as well as the references' comparable process conditions.

Response to Arguments

In response to Applicants' argument that the Japanese Patent provides "no teachings or description…of operational details of any fluidized bed system", the Examiner respectfully submits that Friedrich was and is relied upon for its teachings that it is known in the art of fluidized bed catalytic reactions to employ the catalysts in a continuous regeneration operation; the skilled artisan would reasonably expect that the fluid bed disclosed in the Japanese Patent would permit continuous regeneration of the catalyst, in view of Applicants' definition of this phrase at page 7, lines 27-33 of Applicants' Specification, and also col. 1, lines 28-33 of Friedrich.

The Examiner appreciates Applicants' submission "of a book of which certain sections have been translated", describing the "disadvantages in fluidized bed systems". However, said "pages" are not subject to mandatory consideration, as they have not been submitted by Applicants in an Information Disclosure Statement or in the form of a Declaration. Further, Applicants' submission does include a statement that the translations of book's excerpts have been certified as such.

In response to Applicants' argument that the Japanese Patent's teaching of a steam supply is expressed in terms of weight percent, the Examiner respectfully submits that such an expression is deemed equivalent to the phrase "mass ratio", absent the showing of convincing evidence to the contrary.

In response to Applicants' argument that "the zeolite catalyst material of the patent is a high silica content material having a silica to alumina ratio of at least 500",

the Examiner will assume that this argument is in reference to Miller et al. (col. 4, lines 1-5 therein).

Although Applicants' claims in their present form recite a silica/alumina ratio of from 50 to 300, this range is taught in the Japanese Patent, as set forth in the above rejection (and as also stated in the previous Office Action); see paragraph [0006]. Miller et al. was and is relied upon for its teachings regarding conventional process conditions for catalytically cracking a hydrocarbonaceous feedstock with a catalyst comprising rare earth-containing zeolites (col. 7, lines 23-37 and col. 8, lines 15-44), said conditions including a temperature from about 425°C to about 650°C, a pressure ranging from about 0 to about 6 atmospheres (0 to 607.95 kPa), a catalyst to hydrocarbon weight ratio (considered equivalent to "mass ratio") of from about 2 to 15, and residence or contact times from about 0.3 to 10 seconds. See col. 3, lines 21-44 of Miller et al.

Although Miller et al. "allows the presence of aromatic hydrocarbons in the gasoline product", whereas, in the claimed invention, "the content of aromatics in the product is as small as possible", the Examiner respectfully submits that Applicants' claims are merely directed to "producing light olefins"; the presence of aromatics is not excluded. Further, Applicants' claim limitation "hydrocarbon feed" is considered to read upon any hydrocarbonaceous feed employed in a catalytic cracking process.

For these reasons, Applicants' arguments are not persuasive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICIA L. HAILEY whose telephone number is (571)272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICIA L. HAILEY/
Primary Examiner, Art Unit 1793
July 14, 2009